

REMARKS

Claims 1 to 17 are being canceled.

New claims 18 to 24 are being submitted.

New claim 18 is formed out of features recited in the description on page 7.

New claim 19 is formed out of previous claim 12.

New claim 20 is based on the description, page 4, last line.

New claim 21 corresponds to claim 14.

New claim 22 corresponds to claim 15.

New claim 23 corresponds to claim 16.

New claim 24 corresponds to features set forth near the end of applicant's description..

The Office Action refers to Election of Restrictions.

1. Applicant's election with traverse of Group 11 in the reply filed on December 30, 2005 is acknowledged. The traversal is on the ground(s) that the method produces the hollow molded part. This is not found persuasive because the product does not require radial or tangential forming with an angle. The product could be formed by other ways including heating or drawing.

The requirement is still deemed proper and is therefore made FINAL.

Applicant respectfully requests reconsideration in view of the new claims submitted with the present amendment.

The Office Action refers to Drawings.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "bending of the mold blank" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121 (d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the

drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 UR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Applicant respectfully responds that all previous claims have been cancelled in the present amendment.

The Office Action refers to Claim Objections.

3. Claims 12 and 17 are objected to because of the following informalities: Claim 12 contains the awkward phrasing, "that in the following." Claim 17 contains the awkward phrasing "forming in the following a hollow form part by inner high pressure metal forming." A suggested change is the replacement of the phrases with "then" and "*then* a hollow form part is *formed* by inner high pressure metal forming," respectively. Appropriate correction is required.

The present amendment cancels claims 12 and 17.

The Office Action refers to Claim Rejections - 35 USC § 103.

5. Claims 12 and 16-17 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bignucolo et al. (US Patent 6,513,243) in view of Meredith (US Patent 5,074,555). Bignucolo et al. discloses a method of producing automobile parts having a tubular part (1) with an outer diameter and a starting wall thickness (Figure 1), initially reducing the tubular part by radial deformation performed by rolleng (fluoforming, rollers, Column 2, lines 32-35), over at least a second region (5) conically with an angle and over at least a third region (4) cylindrically to a smaller diameter (Column 2, lines 40-41) and then an inner high pressure metal forming step in the first and second regions (hydroforming, Figures 4-5, Column 2, lines 66-67 and Column 3, lines 1-4)

The rejection is respectfully traversed.

Bignucolo et al. (United States patent 6,513,243 B1) teach a method for the production of a front axle of a motor vehicle.

A first preform with a center cylindrical region 3 is produced from a tube section by way of a radial forming process, wherein the center cylindrical region 3 exhibits two cylindrical ends 4, wherein the diameter of the cylindrical ends 4 is smaller as the diameter of the centered region 3. A frustro-conically formed region 5 extends between the center cylindrical region 3 and each cylindrical end region 4.

A second preform is produced by pressing for upsetting the first preform in a press such that an elliptical cross-section 6b is generated in the center region 3, wherein a recess 6b is present at the two ends of the elliptical cross-section 6b. Then a quadratic cross-section 7a is formed in the center region according to a further preform step and a third preform is produced. The production of the front axle is finalized by inner high-pressure forming. Four forming steps in total are required according to this method in order to form a front axle. A bending operation is not necessary according to the reference and is not provided for. Furthermore this state-of-the-art apparently does not teach a wall thickness increase for generating of a reinforcement. The cross sections and wall thicknesses illustrated in figures 8 and 9 are apparently essentially constant over the length of the front axle.

The production of an A-column of a motor vehicle according to the present Invention therefore is not possible with this method according to United States patent 6,513,243 B1, since an increase of the wall thickness as a reinforcement is desired in connection with an A-column and since a relatively strong bending is present.

A wall thickness increase for achieving a reinforcement and the bending method are however apparently not provided and not described according to the Bignucolo et al. reference and therefore are also not suggested by this state-of-the-art. In addition, the solution according to the Bignucolo et al. reference is relatively expensive based on the required three pre-steps.

The Office Action continues:

The combination of Bignucolo et al. discloses the invention substantially except for increased wall thickness relative to the starting wall thickness in the second and third regions. Meredith discloses a method of radially deforming a tubular part that increases wall thickness relative to the starting wall thickness in the second and third regions (Column 3, line 56 and Figures 2a-b). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Bignucolo et al.'s radial

deformation step increase the wall thickness of the second and third region because "it is desirable to design (a tubular part) without the excessive weight...having a wall thickness along the tapered length,' (Column 1, lines 4550).

Applicant respectfully disagrees with respect to the reference Meredith (United States patent 5,074, 555). This solution of Meredith describes the sleeve with a reinforced the, where the reinforced with this produced by round kneading amongst other methods. According to this solution of Meredith for example a golf bat is produced by round kneading of an end of a tube. Applicant concedes that it is known from this solution to produce a tube for the production of a golf bat with an enlarged wall thickness in the end regions by round kneading. Applicant is of the opinion that if this solution according to Meredith is recited here as state-of-the-art, then the solution according to Meredith necessarily would have to be recited as state-of-the-art also in the reference Bignucolo et al. (United States patent 6,513,243 B1), since both in the presently claimed invention as well as according to the reference Bignucolo et al. as well as according to Meredith there is initially performed a radial forming of a tube. This factor alone however cannot anticipate the novelty and the inventive heights

of the claims of the present application. It cannot be derived from the reference Meredith (United States patent 5,074,555) as well as its combination with the reference Bignucolo et al. that a bending and concludingly an inner high-pressure forming is performed in the conical region and that the increased wall thickness region forms a reinforcement of an A-column of a motor vehicle.

Applicant is submitting new claims 18 through 24 and distinguishes in the following these new claims from the references Bignucolo et al. and Meredith. New claim 19 and new claim 23, where new claim 23 depends on new claim 19, now refer to the production of an A-column of a motor vehicle, where the round kneading (radial forming method) is employed for the production of a first pre-form. However the A-column could not be produced alone with round kneading. Only the bending process also contained in claim 19 and the thereto following inner high-pressure forming can produce the A-column according to the present Invention, wherein the A-column according to the present Invention for the first time does not contain a separate reinforcement element. Applicant is of the opinion that the present claims 19 and 23 are patentable in view of the references Bignucolo et al. (United States patent 6,513,243 B1) and Meredith (United States patent 5,074,555).

Even if the change of the wall thickness course by a round kneading has been known for a long time from the state-of-the-art, the claims 19 and 23 do not represent a simple solution obvious to a person of ordinary skill in the art, but instead claims 19 and 23 furnish a foundation for a new and inventive production method for A-columns of motor vehicles.

6. Claim 13 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Bignucolo et al. and Meredith as applied to claim 12 and 16-17 above, and further in view of Campbell et al. (US Patent 5,823,031). The combination of Bignucolo et al. and Meredith disclose the Invention substantially except for a bending of the mold blank performed between the deformation step and the high pressure forming step. Campbell et al. discloses a bending of the mold blank to be performed between the radial deformation step and the high pressure forming step (Column 10, lines 5-8, Figures 6 and 7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the Invention was made to bend the mold between the deformation and pressure forming steps in order to assist in achieving a desired product.

The references Bigucolo et al. and Meredith are respectfully traversed as set forth above.

The reference Campell (United States patent 5,823,031) is respectfully traversed as follows:

The reference Campell describes a solution by way of which an expanding and bending of a tube is possible. The bent region joins to the expanded region. A wall thickness increase is not possible with this solution. In addition the bending of the tube is not perform under the action of an axial pull tension. The production of an A-column of a motor vehicle having a reinforcement is not possible with the teaching of the reference Campell.

The language of claim 13 with the bending of the tube has been incorporated in to new claim 19. As already stated about recited, the reference Campell in United States patent 5,823,031 describes a solution by way of which an expanding and bending of a tube is possible in successively following regions. The bent region follows to the expanded region with some distance. According to the reference Campell, only a separate expanded region and a separate bent region are produced.

Applicant agrees with the examiner that the bending of a tube is known from this state of the art. however, according to the construction according to the present

Invention the bending is performed in the conical region of increased wall thickness. The bending in the conical region of increased wall thickness further does not result from the combination with the references Bignucolo et al. and Meredith and therefore in particular with reference to the present claims, which refer to the production of an A-column of a motor vehicle.

7. Claim 14 and 15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bignucolo et al. and Meredith as applied to claim 12 and 16-17 above, and further in view of Self et al. (US Patent 2,267,623). The combination of Bignucolo et al. and Meredith disclose the invention substantially except for an intermediate annealing prior to the pressure forming and/or between the deformation step and the pressure forming step. Self et al. discloses an intermediate annealing prior to the pressure forming and/or between the deformation step and the pressure forming step (Column 2, lines 35-39). Therefore, it would have been obvious to one of ordinary skill in the art at the time the Invention was made to anneal the product after the radial deformation step in order to prevent "failure of the blank" (Column 5, lines 69-70) in a manner such as cracking or breaking before further forming is performed.

Applicant in general respectfully disagrees.

Claim 21 (previously claim 14) and claim 22 (previously claim 15) and these claims stand rejected in the office action as not patentable based on the references Bignucolo et al. and Meredith in connection with the reference Self et al. (United States patent 2,267,623). However it is believed that this rejection is not justified. It appears that based on an unintentional error of the office action the reference list contains as item "D" not the number United States patent 2,267,623 but instead the number United States patent 231,941 and that the reference accompanying the office action is also United States patent 231,941. The inventor of this United States patent 231,941 is not Self et al. but instead W. S. Thayer. The erroneously listed reference and the reference accompanying the office action United States patent 231,941 apparently was mixed up and concerns a " Combined check hook and trace carrier". The correct reference Self et al. United States patent, 2,267,623, which was not accompanying the office action, has been procured by the applicant.

The reference Self et al. describes a burner nozzle and a method for producing the same, which represent a completely different construction part as compared with an A-column of a motor vehicle. Column 2, lines 35 to 39, of the

reference Self et al. does not make any statement relating to an intermediate annealing between the individual processing steps.

Applicant concedes however that the reference Self et al. in column 5, lines 69 to 70 recites that a soft annealing of the burner nozzle can be performed after the radial forming. However, the reference Self et al. does not consider any bending operation or any inner high-pressure forming method.

If one starts from the position that the method described in claim 19 for the production of the A-column is patentable relative to the references Bignucolo et al. and Meredith, then of course also an intermediate annealing performed prior to the inner high-pressure forming is also patentable as a dependent claim 21 and 22 (previously 14 and 15).

The present applicant does not claim that an intermediate annealing is performed after the radial forming but instead that the intermediate annealing is performed prior to the inner high-pressure forming. This is by far not the same, since the bending occurs prior to the inner high-pressure forming. Thus according to the applicant the intermediate annealing is performed between the bending step and the inner high-pressure forming.

Applicant concedes however that a decrease in the solidifications generated through the cold forming is to be obtained with this heat treatment both in the solution of the reference Self et al. as well as also in this solution according to the present Invention. Nevertheless, the intermediate annealing in connection with the other method steps for the production of the A-column furnishes nonobviousness to the claims 21 and 22 of the present application.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and further show the state of the art.

US Patent 6,872,061

US Patent 4,157,654

US Patent 6,349,521

US Patent 6,748,786

US Patent 6,434,990 9

These references concern completely different methods and products and have to be classified as relevant obvious state of the art.. Applicant concludes that these references neither individually nor in combination anticipate the solution of the present Invention.

An A-column for a motor vehicle with reinforcement up to now has always been produced by employing a separate reinforcement, compare the reference German printed patent document DE 19518946 A1 recited in the present application.

The reinforcement was here in most cases welded on or riveted on, whereby a high production technological expenditure occurs.

To produce this reinforcement in the A-column for the first time by having the first pre-form V1 furnished with a wall thickness increase based on the radial deformation, wherein this first pre-form V1 is bent to a second pre-form V2 in the thereby generated conical region and wherein finally the A-column S is produced from the second pre-form V2 by inner high-pressure forming such that the wall thickness increase forms the reinforcement, this avoids for the first time the use of a separate reinforcement part, whereby production of the A-column becomes substantially more simple and cost favorable as in connection with a conventional method for the production of an A-column.

Reconsideration of all outstanding rejections is respectfully requested.

All claims as presently submitted are deemed to be in form for allowance and an early notice of allowance is earnestly solicited.

Respectfully submitted,
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